



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Masami KANAMARU, et al.

Serial No.: 09/784,444

5 Filed: February 26, 2001

For: PROPYLENE POLYMER, MOLDING OBJECT THEREOF,  
AND PROCESS FOR PRODUCING PROPYLENE POLYMER

Art Unit: 1713

Examiner: LEE, RIP A

10

DECLARATION UNDER 37 CFR § 1.132

Honorable Commissioner of  
Patents and Trademarks

15 Washington, D.C. 20231

Sir:

I, Masami KANAMARU, a citizen of Japan, of 1-1, Anesakikaigan,  
Ichihara-shi, Chiba 299-0107, Japan, declare that:

20 (1) I am one of the inventors of the subject matter disclosed in the above-  
identified application.

(2) I graduated from Tokyo Institute of Technology with a doctor's degree  
in 1992.

(3) I have worked for Idemitsu Petrochemical Co., Ltd. since 1992.

25 (4) I have studied in polymer chemistry and its related art in Idemitsu  
Petrochemical Co., Ltd. from 1992.

(5) I am familiar with the present invention and the prosecution history of  
the above-identified application.

(6) I have reviewed the Office Action mailed February 18, 2003 and noted

that the Examiner rejected claims 1, 2, 12-14, 15, 17 and 18 under 35 U.S.C. § 103(a) as being unpatentable over JP 11-130807 to Kanamaru et al.

(7) I note that the intrinsic viscosity of the polymers is absent in JP 11-130807. I further note that the Examiner states in the outstanding Office

5 Action that "[s]ince the method of preparation of the polymers is the same as that claimed, including use of the metallocenes that are described in the present claims, one having skill in the art would find it obvious that the prior art polymers would exhibit the properties recited in the present claims."

(8) I still further note that claim 15 has been amended so as to distinguish  
10 the metallocenes used in the method of the present invention from the metallocene disclosed in JP 11-130807.

(9) In order to examine whether the polymers actually taught in Examples 2-4 of JP 11-130807 exhibit the intrinsic viscosity falling within the range, 0.5 to 5 dl/g, recited in claim 1 of the present application, I have conducted the  
15 following comparative experiments.

#### COMPARATIVE EXPERIMENTS 1-3

The procedures of Examples 2-4 described in JP 11-130807 were repeated to prepare respective propylene polymers.

20 Each propylene polymer was measured for intrinsic viscosity in tetralin at 135°C using an automatic viscometer VMR-053 manufactured by Rigo-sha Co., Ltd. The results are shown below.

Comparative Experiments	Results	
	Example Nos. of JP 11-130807	Intrinsic Viscosity [η] (dl/g)
1	2	0.10
2	3	0.25
3	4	0.22

25 (10) I declare further that all statements made herein on personal

knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United  
5 States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 2003/7/9

10

Masami Kanamaru

Masami KANAMARU

**Abridged English Translation**

Japanese Patent Application Laid-Open No. 11-130807

Laid-Open Date: May 18, 1999  
5 Application No.: 9-296612  
Filed: October 29, 1997  
Applicant: Idemitsu Petrochemical Co., Ltd.  
Inventors: Masami Kanamaru et al.

10 **SPECIFICATION****TITLE OF THE INVENTION**

Transition Metal Compound, Catalyst for Propylene Polymerization,  
Production Method of Propylene Polymer Using Said Catalyst, and Propylene  
15 Polymer

**EXAMPLE 2 Production of Propylene Polymer**

A 1.4-L stainless pressure autoclave equipped with a stirring device was heated to 50°C and sufficiently dried under reduced pressure. After returning  
20 the inner pressure to atmospheric pressure by dry nitrogen, the autoclave was cooled to room temperature. Under dry nitrogen flow, 400 ml of dry deoxidized toluene and 2 mmol, in terms of aluminum atom, of methylaluminumoxane (toluene solution manufactured by Albemarle Co., Ltd.) were charged into the autoclave. After starting the stirring at 500 rpm, the temperature was raised  
25 to 60°C over 5 min and the stirring was further continued for 5 min. Into the resultant mixture, was added 0.1 ml of toluene solution containing 1 μmol of 1,2-ethanediyl (1-(4,7-diisopropylindenyl)) (2-(4,7-diisopropylindenyl)) hafnium(IV) dichloride prepared in Example 1. The reaction was continued for one hour while continuously supplying propylene at a pressure of 7.0 kg/cm<sup>2</sup>  
30 G. Immediately after the reaction, the non-reacted propylene was released and purged by dry nitrogen, and the reaction product mixture was poured into

an excessive amount of methanol to stop the reaction. The deposited white polymer was filtered and dried to obtain 14.9 g of propylene polymer. The evaluation results of the propylene polymer are shown in Table 1.

#### EXAMPLE 3

- 5           In the same manner as in Example 1(7), (1,2'-ethylene)(2,1'-ethylene)bisindenyl hafnium(IV) dichloride was prepared from (1,2'-ethylene)(2,1'-ethylene)bisindene prepared according to the method described in WO 96/853.

[0058]

- 10           In the same manner as in Example 2 except for using 2  $\mu$ mol of (1,2'-ethylene)(2,1'-ethylene)bisindenyl hafnium(IV) dichloride in place of 1  $\mu$ mol of 1,2-ethanediyl (1-(4,7-diisopropylindenyl)) (2-(4,7-diisopropylindenyl)) hafnium(IV) dichloride and except for changing the polymerization temperature to 80°C, 28.8 g of propylene polymer was prepared. The  
15 evaluation results of the propylene polymer are shown in Table 1.

#### EXAMPLE 4

- In the same manner as in Example 2 except for using 1,2-ethanediyl (1-(4,7-diisopropylindenyl)) (2-(4,7-diisopropylindenyl)) zirconium(IV) dichloride in place of 1,2-ethanediyl (1-(4,7-diisopropylindenyl)) (2-(4,7-  
20 diisopropylindenyl)) hafnium(IV) dichloride, 9.5 g of propylene polymer was prepared. The evaluation results of the propylene polymer are shown in Table 1.